

**EAST Search History****EAST Search History (Prior Art)**

| Ref # | Hits | Search Query   | DBs                    | Default Operator | Plurals | Time Stamp       |
|-------|------|--|------------------------|------------------|---------|------------------|
| L1    | 1    | 600/437.ccls. and waveform\$1 and contrast microbubble \$1 and suppress\$4 pulse\$1 and summ\$4 fundamental wave\$1 and second order harmonic\$1 and control \$4 samp\$4 frequenc \$4 and common envelope and control \$4 carrier wave\$1 and vary\$3 phase.clm. | US-PGPUB; USPAT; USOCR | AND              | OFF     | 2011/04/08 21:36 |
| L2    | 0    | 600/407.ccls. and waveform\$1 and contrast microbubble \$1 and suppress\$4 pulse\$1 and summ\$4 fundamental wave\$1 and second order harmonic\$1 and control \$4 samp\$4 frequenc \$4 and common envelope and control \$4 carrier wave\$1 and vary\$3 phase.clm. | US-PGPUB; USPAT; USOCR | AND              | OFF     | 2011/04/08 21:38 |
| S4    | 4    | (transmit\$4 and receiv \$4 pulse\$1 with contrast microbubble \$1) and (suppress\$4 pulse\$1 and fundamental wave\$1 and second order harmonic\$1) and (pulse \$1 amplifier\$1 and amplitude\$1 MPa)  | US-PGPUB; USPAT        | AND              | OFF     | 2008/12/16 13:55 |
| S5    | 7    | (transmit\$4 and receiv \$4 pulse\$1 and contrast microbubble \$1) and (suppress\$4 pulse\$1 and fundamental wave\$1 and second order harmonic\$1) and (pulse \$1 amplifier\$1 and amplitude\$1 MPa)   | US-PGPUB; USPAT        | AND              | OFF     | 2008/12/16 15:45 |

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| S6  | 169 | (waveform\$1 and contrast microbubble \$1) and (summ\$4 fundamental wave\$1 and second order harmonic\$1) and (display\$4 fundamental amplitude \$1)        | US-PGPUB; USPAT | AND | OFF | 2008/12/16 16:08 |
| S7  | 5   | (waveform\$1 and contrast microbubble \$1) and (summ\$4 fundamental wave\$1 and second order harmonic\$1) and (display\$4 fundamental amplitude \$1 S5 MPa) | US-PGPUB; USPAT | AND | OFF | 2008/12/16 16:09 |
| S8  | 0   | (pulse\$1 with contrast microbubble\$1) and (display\$4 fundamental amplitude \$1 and first cesond third order harmonic \$4)                                | US-PGPUB; USPAT | AND | OFF | 2008/12/16 17:12 |
| S9  | 123 | (pulse\$1 with contrast microbubble\$1) and (display\$4 fundamental amplitude \$1 and first second third order harmonic \$4)                                | US-PGPUB; USPAT | AND | OFF | 2008/12/16 17:12 |
| S10 | 0   | display\$ amplitude\$1 and first order harmonic\$1 and second order harmonic \$1  | US-PGPUB; USPAT | ADJ | OFF | 2008/12/16 17:30 |
| S11 | 0   | display\$ amplitude\$1 and third order harmonic\$1 and second order harmonic \$1  | US-PGPUB; USPAT | ADJ | OFF | 2008/12/16 17:31 |
| S12 | 1   | display\$ amplitude\$1 and second order harmonic\$1   | US-PGPUB; USPAT | ADJ | OFF | 2008/12/16 17:31 |
| S13 | 0   | (signal amplitude and sound pressure) and ( zero "0" degree pulse and "180" degre pulse \$1 and summ\$5 signal \$1)   | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:12 |

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| S14 | 1    | (signal amplitude\$1 and zero "0" degree pulse and "180" degree pulse\$1 and summ\$5 signal\$1)  | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:13 |
| S15 | 0    | (signal amplitude\$1 and zero degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (harmonic\$1 filter\$5)                                  | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:15 |
| S16 | 0    | (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (harmonic\$1 filter\$5)  | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:15 |
| S17 | 0    | (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1) and (harmonic\$1 filter\$5)   | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:15 |
| S18 | 0    | (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1) and (harmonic\$1 filter\$5)   | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:15 |
| S19 | 2566 | (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1) and (harmonic\$1 filter\$5)   | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:15 |
| S20 | 2404 | (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (harmonic\$1 filter\$5)  | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:16 |
| S21 | 34   | (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (harmonic\$1 filter\$5) and (contrast imag\$4 microbubble \$1) | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:17 |

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| S22 | 30   | (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (fundamental wave\$1 and second and first order harmonic\$1 ) and (contrast imag\$4 microbubble\$1)                   | US-PGPUB; USPAT | AND | OFF | 2008/12/16 19:19 |
| S23 | 1656 | 600/437.ccls. and (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (fundamental wave\$1 and second and first order harmonic\$1 ) and (contrast imag\$4 microbubble\$1) | US-PGPUB; USPAT | OR  | OFF | 2008/12/17 21:59 |
| S24 | 469  | 600/458.ccls. and (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (fundamental wave\$1 and second and first order harmonic\$1 ) and (contrast imag\$4 microbubble\$1) | US-PGPUB; USPAT | OR  | OFF | 2008/12/17 22:00 |
| S25 | 327  | 600/454.ccls. and (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (fundamental wave\$1 and second and first order harmonic\$1 ) and (contrast imag\$4 microbubble\$1) | US-PGPUB; USPAT | OR  | OFF | 2008/12/17 22:00 |
| S26 | 37   | 600/465.ccls. and (amplitude\$1 and "120" degree pulse and "180" degree pulse \$1 and summ\$5 signal \$1) and (fundamental wave\$1 and second and first order harmonic\$1 ) and (contrast imag\$4 microbubble\$1) | US-PGPUB; USPAT | OR  | OFF | 2008/12/17 22:00 |

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| S27 | 43      | "6095980"  | US-PGPUB;<br>USPAT  | OR  | OFF | 2009/08/30<br>16:00 |
| S28 | 1       | "20020188199"  | US-PGPUB;<br>USPAT  | OR  | OFF | 2009/08/30<br>16:03 |
| S29 | 10      | "5517996"  | US-PGPUB;<br>USPAT  | OR  | OFF | 2009/08/30<br>16:04 |
| S30 | 5877517 | transmit\$4 beamform<br>\$4 and receiv\$4<br>beamform\$4 and add<br>\$4 sum\$4 echo signal<br>\$1 with transmit receiv<br>\$4 control\$4 and<br>envelop\$3 signal\$1<br>and var\$4 phas\$4 with<br>"360" degre\$2              | US-PGPUB;<br>USPAT  | OR  | OFF | 2009/08/30<br>16:08 |
| S31 | 11      | transmit\$4 beamform<br>\$4 and receiv\$4<br>beamform\$4 and add<br>\$4 sum\$4 echo signal<br>\$1 with transmit receiv<br>\$4 control\$4 and<br>envelop\$3 signal\$1<br>and phas\$4 with "360"<br>degre\$2                     | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | AND | OFF | 2009/08/30<br>16:10 |
| S32 | 7       | transmit\$4 beamform<br>\$4 and receiv\$4<br>beamform\$4 and add<br>\$4 sum\$4 echo signal<br>\$1 with transmit receiv<br>\$4 control\$4 and<br>envelop\$3 signal\$1<br>and phas\$4 with "360"<br>degre\$2 and microbub<br>\$5 | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | AND | OFF | 2009/08/30<br>16:19 |
| S33 | 49      | ((TAKASHI) near2<br>(AZUMA)).INV.  | US-PGPUB;<br>USPAT; USOCR   | OR  | OFF | 2009/08/30<br>22:05 |
| S34 | 0       | transmit\$4 receiv\$4<br>and imag\$1<br>microbubble\$1 contrast<br>\$1 and sum\$4signal\$1<br>and control\$4 carrier<br>wave\$s with vary\$4<br>phase\$3 angle\$1  | US-PGPUB;<br>USPAT  | AND | OFF | 2010/03/24<br>17:59 |
| S35 | 11      | transmit\$4 receiv\$4<br>and imag\$1<br>microbubble\$1 contrast<br>\$1 and sum\$4 signal\$1<br>and control\$4 carrier<br>wave\$s with vary\$4<br>phase\$3 angle\$1   | US-PGPUB;<br>USPAT  | AND | OFF | 2010/03/24<br>17:59 |

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| S36 | 8 | transmit\$4 receiv\$4 and imag\$1 microbubble\$1 contrast\$1 and sum\$4 signal\$1 and control\$4 carrier wave\$1 with vary\$4 phase\$1 angle\$1                 | US-PGPUB;<br>USPAT | AND | OFF | 2010/03/24<br>17:59 |
| S37 | 4 | "600".clas. and transmit\$4 receiv\$4 and imag\$1 microbubble\$1 contrast\$1 and sum\$4 signal\$1 and control\$4 carrier wave\$1 with vary\$4 phase\$1 angle\$1 | US-PGPUB;<br>USPAT | AND | OFF | 2010/08/31<br>14:38 |
| S38 | 1 | "10586665"  | US-PGPUB;<br>USPAT | AND | OFF | 2010/12/10<br>13:51 |

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